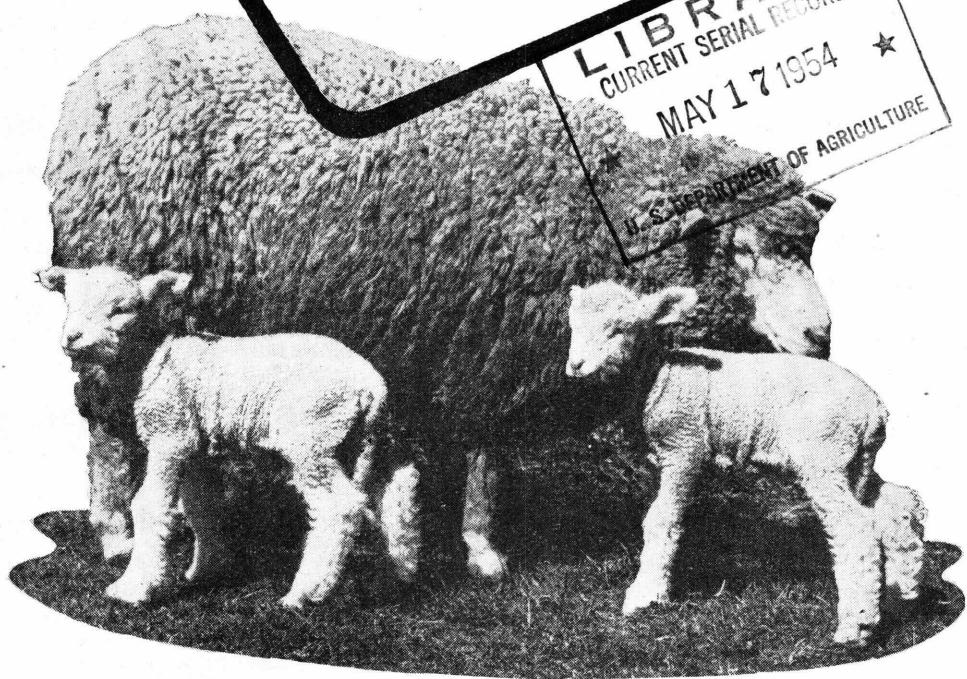


Historic, archived document

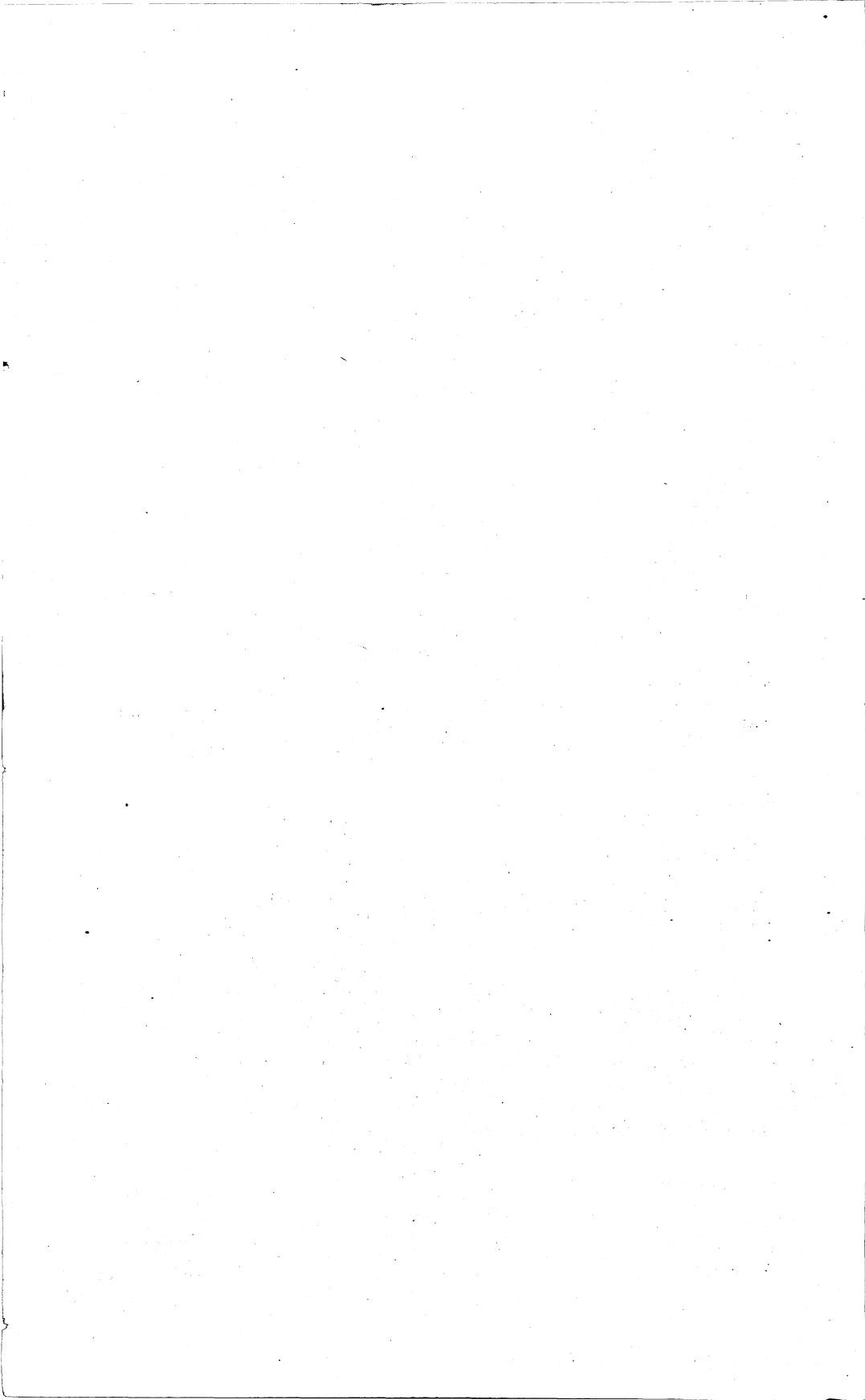
Do not assume content reflects current
scientific knowledge, policies, or
practices.

1
Ag 84F
cop. 6

Sheep Raising on the Farm



U. S. DEPARTMENT OF AGRICULTURE
Farmers' Bulletin No. 2058



SHEEP RAISING does not require expensive equipment or heavy labor, but does require study and continuous attention.

Early in the fall is the best time to start a flock. Good grade ewes and a purebred ram are the best for beginners.

The beginner may acquire experience with fewer than 20 ewes, but for economy of time and fencing, and to assure proper care, flocks of 60 or more ewes are usually more profitable.

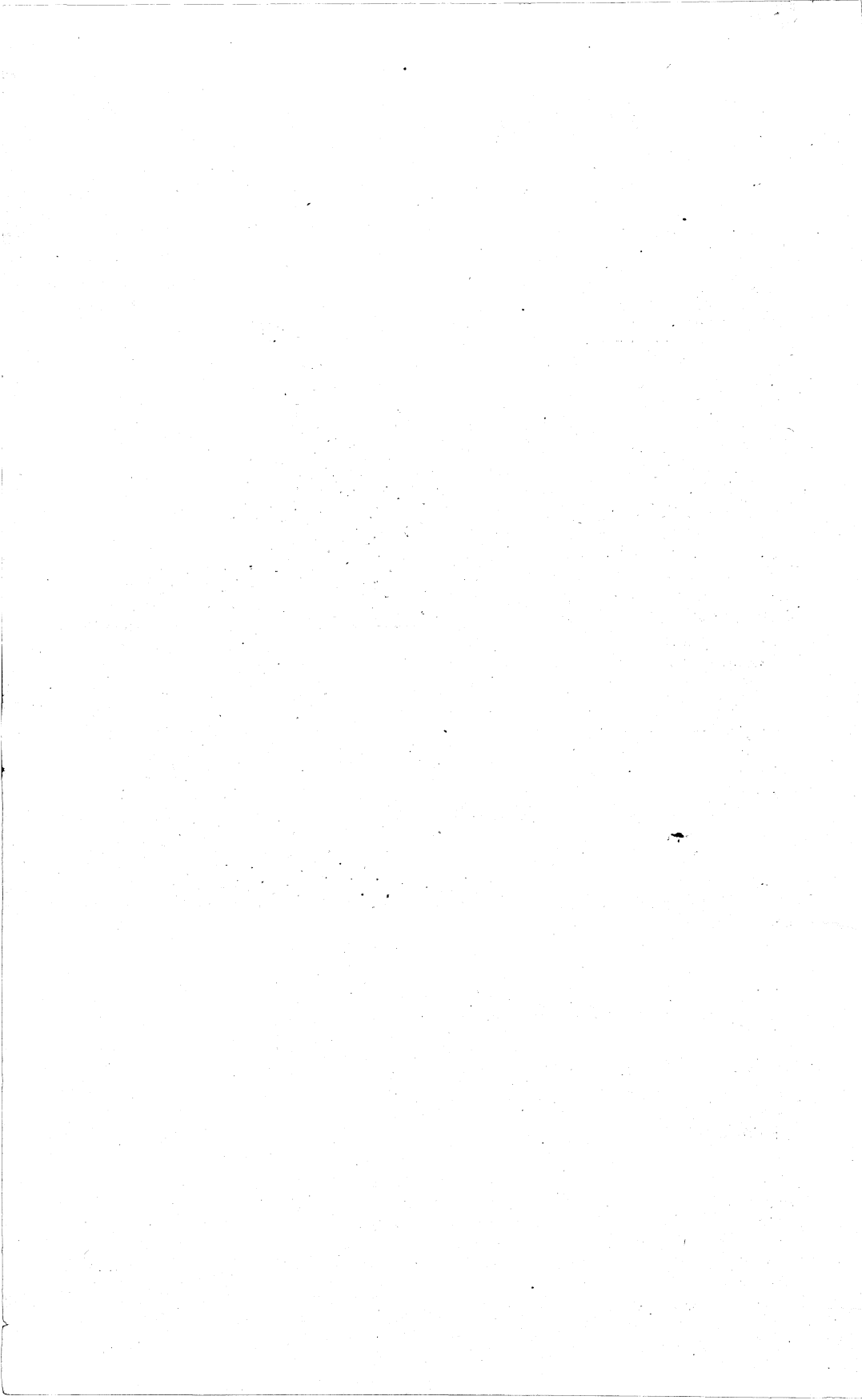
In most cases lambs are most profitable if made ready for market when about 4 or 5 months old, weighing 75 to 90 pounds.

Unless the flock has a very large territory to range over it is necessary to make divisions of the pasture or to use seeded forage crops. Change of grazing grounds is necessary to insure the health and thrift of the lambs.

This publication is a revision of and supersedes Farmers' Bulletin 840, Farm Sheep Raising for Beginners.

CONTENTS

	Page		Page
Sectional possibilities for production.....	1	Management at breeding time.....	6
Requirements for sheep raising.....	2	The flock in winter.....	8
Returns from sheep raising.....	3	The lambing season.....	9
Starting the flock.....	4	The flock in summer.....	10
Size of flock.....	6	Preparing lambs for market.....	15



Sheep Raising on the Farm

By C. G. Potts, *animal husbandman, Animal Husbandry Division, Bureau of Animal Industry, Agricultural Research Administration*

SECTIONAL POSSIBILITIES FOR PRODUCTION

IN THE eastern half of the United States, sheep are usually kept in small farm flocks and raised almost entirely in connection with other agricultural enterprises. Sheep raisers in this area have a material advantage over those in the western half of the country in that they are located nearer the largest centers of lamb consumption and therefore pay lower transportation charges. Also, they are able to get their lambs to market quicker. At least one third of the lamb eaten in the United States goes to consumers in those States north and east of Ohio. Probably two thirds of all the lamb eaten is consumed in States east of the Mississippi River.

Sheep raising has been carried on in New England since its settlement, and at one time New England ranked first in the United States in the production of sheep and of wool. Although flocks of sheep in the Northeastern States were much reduced in numbers after new lands in the West began to be developed agriculturally, New England is still well adapted to sheep raising, and it retains its advantage of being near centers of population and of lamb consumption. The dairy industry has been the greatest competitor of the sheep industry in New England because of the large market for milk.

Throughout the Appalachian Mountain Range in Pennsylvania, Maryland, Virginia, West Virginia, Kentucky, Tennessee, and North Carolina, there are large areas well suited for sheep raising. Much of this mountain region ranks high in the production of high-quality early lambs to be sold on eastern markets.

In the hillier sections of northern Arkansas and southern Missouri there are large areas of comparatively cheap land on which sheep can be raised at relatively low cost. Dogs and other predatory animals, however, occasionally ravage flocks in these sections, thus retarding the sheep-raising industry.

Cut-over timber land in Michigan and Wisconsin offers excellent summer grazing for sheep, but the winters are long and severe, and the cost of feeding the animals during the winter greatly reduces the profit which might otherwise be realized from a farm flock. Many Southern States, especially Louisiana and Mississippi, that do not have this problem because sheep can graze the greater part of the winter are turning more and more to sheep production in connection with other farm operations.

Sheep raising is not necessarily confined to regions where there are large tracts of cheap land unsuitable for other agricultural enterprises. In the Corn Belt, where land is higher in price, a profitable system of sheep raising has been worked out in which both permanent pasture and forage crops are utilized. This system in connection with other farm operations improves the utilization of labor and feed supplies on the farm and increases the farm income.

Sheep can also be kept to advantage on considerable numbers of irrigated farms in the West. Irrigated forage crops provide part of the summer pasture for the sheep, if not all of it. Harvested crops, especially alfalfa, produced in most irrigated sections will provide ex-

cellent winter feed for sheep. Pasturing sheep on such crops during the summer eliminates much of the expense of harvesting the crops. Moreover, the cost of marketing such crops as grain and hay in the form of lamb and wool is much

lower than the cost of marketing the same crops unfed. The use of crops for pasture provides an opportunity to rotate feeding grounds and thus reduce losses from stomach worms, which usually infest sheep on heavily stocked pastures.¹

REQUIREMENTS FOR SHEEP RAISING

Soil and Climate

Sheep naturally inhabit areas that are high and dry. They will, however, thrive on any land that is not wet and swampy. The fine-wool breeds of sheep, especially, exhibit a preference for lands that are drier, whereas there are one or two British breeds that are particularly adapted to the lowlands. Sheep raising has been carried on with success in tropical temperatures with low rainfall, but not so successfully in regions of high temperatures and high rainfall. However, since the beneficial effects of phenothiazine in the control of internal parasites in sheep have become more generally known, many sections of the country once considered unsatisfactory may now prove profitable for this type of livestock production.

Pasture and Feed

It is the natural habit of sheep to graze over rather wide areas of land and to seek a variety of food plants. This habit adapts them to being kept in large numbers on lands that are sparsely vegetated and that furnish a wide variety of grasses or other plants. Sheep do better on grasses that are short and fine than they do on coarse or high feed. They will eat considerable quantities of brush, and if confined to small areas, they will do a fair job of cleaning up the land. When used for the purpose of cleaning up land or when pastured wholly on land that produces nothing but brush, they cannot be expected to

prove very satisfactory in producing good lambs or good wool.

The cheapest and best feed for sheep is pasture or sown forage crops of cereals, rape, etc. Changing the grazing ground frequently is necessary to the health and maximum thrift of sheep when the pastures do not offer a wide range. This practice calls for fencing to subdivide permanent pastures or for tight fencing around runs in which sheep are to be kept. Sections of movable fencing may be used to keep sheep on small areas of forage crops.

It is seldom profitable to feed grain to sheep when good pasture is available. Flocks can be kept in good condition and lambs can be raised to the marketing stage without feeding any grain. It is not likely to be profitable under any conditions to feed a ewe and her lamb more than 100 pounds of grain a year. Ewes dropping their lambs before pasture is ready and lambs during the same period are most in need of grain, but the feeding that is most economical and most likely to keep the flock in good condition is that which provides frequent changes of good pastures and grazing crops and winter rations mainly of good leguminous hays, with some succulent feeds, reserving what grain is to be used to feed in winter and after the lambs are born.

Silage or roots furnish cheap feed and are especially useful in keeping ewes in good condition during the

¹ Farmers' Bulletin 1330, Parasites and Parasitic Diseases of Sheep, U. S. Department of Agriculture.

winter. Too free use of roots for ewes in lamb is sometimes considered to increase the losses of young lambs, and the exclusive use of silage as a roughage is unsafe, both for the ewes and for the lambs. In many sections of the country fall-sown grain crops can be pastured with sheep late in the fall, during the winter, and in early spring, after which the sheep can be removed and the crop still harvested for grain. Either wheat, barley, or rye make excellent forage during the winter and early spring months.

Buildings and Fences

In any part of the United States the main essentials for sheep barns are dryness and freedom from drafts. Unless lambs are to be dropped in cold weather, no expense for heating is necessary. Protection from winter rains and heavy snowfalls is desirable, but the best results may be expected when ewes are allowed access to a dry bed in the open.

Fences to hold sheep should be of woven wire, boards, or rails. Barbed or smooth wire cannot be used satisfactorily alone, but a 36-inch woven-wire fence with two or

three strands of barbed wire above it is commonly used.

The construction, planning, and cost of a variety of barns, sheds, and dog-proof fences for sheep are discussed fully in Farmers' Bulletin 810, Equipment for Farm Sheep Raising.

Labor

The labor required to keep a farm flock yielding maximum returns at lowest cost varies according to the system followed. In any case, the amount of labor is small in comparison with that required by other livestock products of equal value. Feeding sheep in winter is light labor, and the manure need not ordinarily be removed oftener than once a year from stables used only for sheep.

However, one should not engage in sheep raising with the idea that sheep require little attention. Their wants are numerous and varied, and constant vigilance is necessary to forestall conditions that result in ill health or lack of thrift. A large flock frequently requires day and night attendance at lambing time to avoid losses of ewes and young lambs. The habits of sheep differ from those of other farm animals, and they are interesting animals.

RETURNS FROM SHEEP RAISING

The gross annual returns from ewes of breeding age may be expected to range from \$10 to \$30 a head, depending upon the number of lambs raised, the weights of the fleeces, and the values of these products. Lamb and wool yields depend largely upon the breed selected. With ewes of any one of the medium-sized mutton breeds, 115 lambs per 100 ewes can be raised, and a 150 percent lamb crop is frequent. Lambs are most in demand when fat at a weight of from 75 to 90 pounds. These weights and sufficient fatness can be obtained at from 4 to 5 months of age with very little grain feeding, and before the

lambs eat much of the forage in pasturage, if the ewes' feed produces a continuous and plentiful supply of milk.

Wool returns vary from 5 to 11 pounds per ewe. The larger mutton breeds yield more, as do also the fine wools, but the value per pound of the latter is usually less on account of the greater proportion of natural grease or yolk present. However, market demand in some cases has placed a premium on fine wool, making it more valuable even unscoured than wool of medium grades.

While wool is an important by-product of the sheep industry, the

farmer usually gets from 4 to 6 times as much returns for the lambs he produces as for the wool sold and he will find it profitable to select his ewe flock, as well as the rams to be used, with special emphasis on their ability to produce lambs that grow fast and reach market weight with a high degree of finish.

It is difficult to estimate satisfactorily the net return from a flock of ewes. Sheep can be made to yield practically the same net returns on the value of the land as cattle and swine, if well cared for, and if kept on land reasonably well adapted for sheep raising.

STARTING THE FLOCK

Time to Start

Late summer or early fall is the most favorable time to make a start in sheep raising. Ewes can be procured more readily at this time, and can be kept on meadows, grain stubble fields, or late-sown forage crops to get them in good condition for breeding. Experience with ewes through fall and winter will also render a beginner more capable of caring for them at lambing time. It is seldom possible to buy bred ewes at reasonable prices.

Selection of Stock

The inexperienced sheep raiser should begin with grade ewes of the best class available and a purebred ram (fig. 1). The raising of purebred stock and the selling of breeding rams can best be undertaken by experienced sheep raisers. In selecting the type and breed of sheep to raise consider the class of pasture and feeds available and the general system of farming to be followed, along with the peculiarities of the breeds and the conditions and kind of feeding and management for which each has been especially developed.²

For farms of all-arable land the Illinois Experiment Station has recommended a plan of livestock production which includes 80 ewes (1 ewe to 2 acres) along with 22 breeding cows and 12 brood sows. Arable land of the best class when used exclusively for sheep can be made to support from five to eight ewes (with their lambs until marketed) per acre. On pastures suitable for either cattle or sheep, five ewes eat as much as one cow or steer, and the winter feed required for one breeding cow not in milk is equivalent to that needed for about eight ewes.

It is highly advantageous for farmers in a neighborhood to keep the same breed of sheep, or at least to use rams of the same breed. After a suitable breed has been selected, obtain ewes that are individually good and that have as many crosses as possible of the breed selected. With such a foundation and the continuous use of good purebred rams of the same breed, the flock will make continuous improvement in uniformity, mutton type, and conformation. However, in experimental work at the Agricultural Research Center at Beltsville, Md., purebred ewes of one breed prove about 16 percent more profitable in the production of commercial lambs when mated with rams of another breed than when mated with rams of their own breed. This commercial advantage should not deter the breeder from producing purebred animals for breeding stock and for crossing with other breeds, as it is doubtful that grade animals would produce the same results.

² Farmers' Bulletin 576, "Breeds of Sheep for the Farm," discusses the adaptability of each of the common breeds.

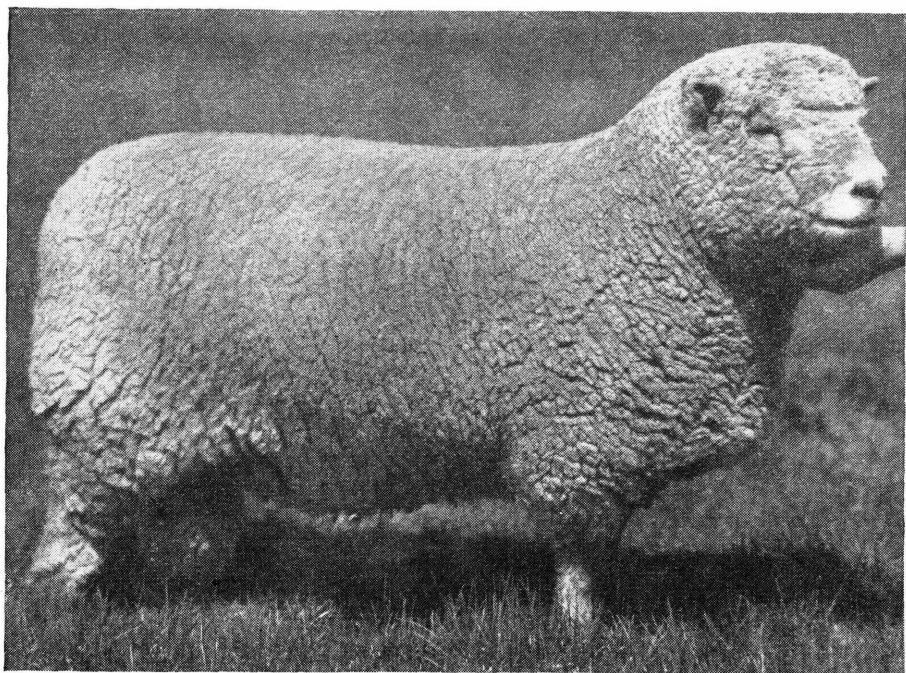


FIGURE 1.—A good type of purebred mutton sire.

It is often impossible to get ewes of desired type and breeding nearby for a reasonable price. Ewes from western ranges can be obtained directly from a stockyard market. Most range ewes are of Merino breeding. First-cross ewe lambs and, less often, older stock bred on the range and sired by rams of the down or long-wool breeds are sometimes obtainable. These, or even grade Merino ewes, furnish a foundation for the flock that can be quickly graded up by using mutton rams of the breed preferred. Lambs from Merino ewes and mutton rams grow well and sell well if properly cared for, but the returns may be less than when ewes with some mutton blood are used. Sheep from the range are less often infested with internal parasites than are farm sheep, and in large shipments there is usually opportunity for better selections.

Age of Ewes

Yearling or 2-year-old ewes are preferable to older stock. Ewes with "broken mouths"—that is, those that have lost some of their teeth as a result of age—cost less than younger ones, but are not a good investment for inexperienced sheep raisers.

Until a sheep is 4 years old its age can usually be told within a few months. The lambs have small, narrow teeth, known as milk teeth. At about 12 months of age the two center incisors are replaced by two large, broad, permanent teeth. At about 24 months two more large teeth appear, one on each side of the other pair (fig. 2). Another pair appears at 3 years of age, and the last, or corner teeth, at about the end of the fourth year. The sheep then has a full mouth. Heavy or light feeding has considerable effect upon the exact time of appear-

ance. After a sheep is 4 years old, its exact age can only be estimated. As age advances, the adult teeth usually become shorter and the distance between them increases. The normal number of teeth may be retained until the sheep is 8 or 9 years old, but more often some are lost after the fifth year.

SIZE OF FLOCK

Persons wholly inexperienced with sheep will do well to limit the



FIGURE 2.—Mouth of a 2-year-old. The two large teeth in the center come in at about 12 months of age. The next pair, one on each side of the center pair, come in at about 2 years of age. The two small teeth on the right are lamb teeth.

In buying ewes, particularly those from the range, examine the udders when possible to see that they are free from lumps that would prevent them from being milkers. Also guard against buying ewes with teats that have been clipped off at shearing, because they are useless as breeders.

size of the flock at the start. A beginner can acquire experience rapidly with 8 or 10 ewes. It is very doubtful, however, whether anyone should make a start with sheep unless the arrangement of the farm and the plan of its operation allow the keeping of as many as 30 ewes. In most cases 60 or more will be handled better and more economically than a very small flock. The number of ewe-lambs that can be kept for breeding each year should be about one-half the number of breeding ewes. Old ewes usually should be discarded when 5 or 6 years old. When this is done and the poorest ewe lambs are sold, a flock will ordinarily double in size in 3 years.

The advantage of a small flock is that it does well with less attention than is necessary for a larger one. A large flock requires more fencing to provide more frequent changes of pasture and to give extra protection against dogs. Also, the incidence of disease is greater. Although the net profit per ewe may be less in large flocks, the increased number tends to make the enterprise worthy of serious attention.

MANAGEMENT AT BREEDING TIME

Ewes

The period of gestation in sheep is about 145 days. Ewes should be mated to drop their first lambs when about 24 months old. The first few cool nights in late summer or early autumn the ewes come in heat, although some breeds come in heat at

almost any time of the year. These periods in which the ewes will breed last from 1 to 3 days and recur at intervals of from 14 to 19 days. At the time the ewes are bred they should be gaining in weight. Feeding at this time also helps to bring ewes into heat and is commonly

called "flushing." The main purpose of flushing ewes is to obtain a larger lamb crop and to have the lambs dropped as near the same time as possible, but it also brings the ewes into good condition for the winter. To accomplish this the ewes are changed from scant to abundant pastures of timothy, bluegrass, or rape. Rank, watery, fall growths of clover are of little use for flushing, as they often bring the ewe in heat several times and are not particularly fattening. Often some grain is fed as a supplement to pasture. Oats are a much better grain supplement than corn. Pumpkins strewn over the fields are excellent for this purpose.

Remove any large locks of wool or dung tags about the tail at breeding time.

Rams

Beginning about a month before the breeding season, give the ram extra grain. Two parts of oats and one of bran by bulk form an excellent mixture. Oats alone are also very good. If the ram is thin the following mixture is excellent: Corn, 5 parts; oats, 10; bran, 3; and linseed meal, 2 parts, by weight.

The number of ewes a ram will serve depends largely upon his age and how he is handled. A ram lamb may serve from 5 to 15 ewes, depending upon his maturity. A yearling may serve from 15 to 25, while a mature ram well cared for should serve from 40 to 60 if allowed to run loose with the flock. By permitting him to be with the ewes an hour morning and evening more ewes can be bred. If the ram is old or injured or is to be bred heavily, another ram may be used to locate the ewes in heat and thus save the older ram from circulating through the flock. A bag or a piece of cloth tied under the belly prevents the "teaser" from serving the ewes. As this practice requires confining the flock at least once a

day it is not usually recommended for grade or commercial flocks. If the ram is allowed to run in the field with the ewes he may be made to mark the one he has served, so that the approximate dates of lambing can be determined. A daub of special branding paint that later will scour out of the wool can be applied every day or two on his chest and brisket. A different color of paint may be used, for each 17-day period during breeding season to indicate the approximate time at which the ewes will lamb. Any commercial pigment mixed with castor or linseed oil can be used for this purpose, but under no consideration should any mixture containing tar be used. When the ram is not in the flock he will be quieter and more easily handled if one or two wether lambs or bred ewes are kept with him.

Fall Feeding

Stubble and stalk fields may well form the principal means of sustenance for the breeding flock in the fall before the rains injure their feed value. Fence strips in plowed fields may also give good grazing for a few days. Clover and grass pastures may well be left until the stubble and stalk fields have been used. For regions where the winters are not too severe, a heavy stand of well-cured bluegrass will help very much in carrying the flock through the winter in good condition. Green rye pastures in the late fall give considerable succulence and furnish exercise for the flock. In the South velvetbeans are of great help in carrying the flock into January.

The shepherd should train himself to read the condition of his sheep by feeling the bone of the loin or back. At no time while they are in lamb should ewes be allowed to lose in weight. In open wet fall seasons there is danger of

waiting too long to start feeding. A rank growth of soft grass may appear to be good feed, but the real

need of the flock should be determined by a closer examination of a representative number of ewes.

THE FLOCK IN WINTER

Winter Feed

Winter management has a very important relation to the returns from the flock. Feeding should be such as will produce the most vigorous lambs and at the same time keep the wool in good condition. Leguminous hays, straws, and cornstalks usually form the main part of economical winter rations. Clover, alfalfa, or soybean hay, if of good quality, may be used as the sole feed until near lambing time, from 3 to 3½ pounds a day being sufficient for ewes weighing less than 150 pounds. Oat and wheat straw are better than rye or barley straw. The beards of the latter are likely to prove troublesome. Cornstalks placed where the ewes can eat off the leaves may be used as a part of the roughage ration. If this ration is made up largely of cornstalks or straw, a nitrogenous concentrate should also be fed. Timothy hay is not good sheep feed unless it is cut in the early stage of bloom, or when relatively immature.

Such succulent feeds as roots or silage help to keep the ewes in good health. The use of silage will often materially reduce the cost of the ration, but silage cannot safely be used without any hay. Silage from well-matured corn is usually considered best for sheep, although silage made from grass and small-grain forage can be used. It is not advisable to feed more than 3 pounds per head daily of either kind of silage. Do not feed spoiled, frozen, or moldy silage.

For bred ewes, roots, particularly turnips, should be used sparingly until after lambing. Each of the following rations contains approximately the amount of the various nutrients required daily for ewes of

from 110 to 145 pounds in weight when in dry lot:

	(1)	Pounds
Alfalfa or soybean hay-----	3	
Corn silage-----	2	
Shelled corn-----	½	
	(2)	
Alfalfa-----	3	
Corn stover (edible portions)-----	2	
	(3)	
Alfalfa or clover hay-----	3½	
Corn silage-----	2	
	(4)	
Oat straw-----	2	
Corn silage-----	2	
Shelled corn-----	¾	
Linseed meal-----	¼	

Ewes pastured on fall wheat or rye during the winter months should have a supplement of some dry or concentrated feed. Silage or roots are not desirable when the pasturage is soft or green. One-half pound of cottonseed meal contains the daily requirement of protein for pregnant ewes. When price suggests the use of this concentrate, other feeds should be of a carbonaceous character. One-quarter pound of cottonseed meal per day and a selection of other feeds will be better than a ration containing a larger amount of cottonseed meal.

Exercise in Winter

If lambs are to be born strong and vigorous, a moderate amount of exercise is necessary for the ewes during the winter. Scatter their roughage over a field so they will work back and forth over it while eating, or feed some of the roughage at a distance from the shelter. If winter pastures are used, no other arrangement for exercise is necessary. At no time should pregnant ewes be forced to wade through deep

mud or snow; neither should they be chased by dogs nor forced to jump over boards nor to pass through narrow doors, as such treatment causes loss of lambs or of both ewes and lambs.

THE LAMBING SEASON

Importance of Care During Lambing

The size and quality of the yearly lamb crop practically determine the profits to be made from raising sheep. A small crop of lambs means less profit, and if they are inferior in quality great skill and care are necessary to make any profit. At lambing season extra attention must be given to the ewes and lambs. If a record of the date of service has been kept, the approximate date of lambing can readily be foretold, for the ewes usually carry their young about 145 days (5 days less than 5 months).

Care of Ewes

Heavy grain feeding just before lambing is likely to cause udder troubles. At this time the wool around the udder should be clipped short to allow the lamb to find the teats readily. Just before lambing the ewe becomes restless and appears sunken in front of the hips. She should be put in a separate pen, which may be made of two light panels fastened together by a hinge and set in a corner.³

These panels permit the ewe to see the other members of the flock and prevent her from becoming excited or nervous. They also prevent other sheep from trampling on the lamb, and the ewe has a good chance to get acquainted with her lamb avoiding the danger of disowned lambs later. Lambing pens should be in a well-ventilated room that is free from drafts and as warm as it can be made without artificial heat. In very cold weather a

If fleeces are allowed to become soaked with rain or wet snow, colds and pneumonia may result. Dry snow, on the other hand, has no ill effect, as the ewes readily shake it off.

blanket thrown over the lambing pen will insure sufficient warmth to give the lamb a good chance in the first few hours, which are important ones.

Troubles at Lambing Time

Well-fed ewes seldom have much trouble in lambing, but there may always be need of assistance for a few. If the ewe strains for half an hour without delivering the lamb, aid may then be given. The normal position of the lamb at birth is with forelegs extended, the head lying between them. If the lamb is not in the proper position, the shepherd should correct it by inserting the hand and arm into the vulva and effecting the change. When such assistance is needed the shepherd should either use a sterile rubber glove or trim his fingernails, disinfect his hand and wrist with some good disinfectant, and rub vaseline or oil upon his hand. When the position is correct, the lamb can usually be successfully delivered by catching both front feet and pulling outward and downward as the ewe strains. If the womb and vagina have been lacerated by the operation, it is well to use a solution composed of 1/2 ounce of zinc sulfate and 2 ounces of tincture of opium in a quart of water at blood heat. This should be poured into the womb by means of a rubber tube and funnel.

Weak Lambs

The lamb that is born strong and vigorous will need little care. If the shepherd is present at the birth

³ These panels are described in Farmers' Bulletin 810.

of a weak lamb, he should wipe away the phlegm or membrane from its nostrils and, if it is not already broken, sever the navel cord. Blowing into the mouth and nostrils and slapping gently on the ribs, first on one side and then on the other, will often save the life of a lamb that is apparently dead.

In cold weather lambs may get chilled and die unless remedies are promptly used. Wrapping the lamb in hot flannel cloths, which are renewed as often as necessary, is an excellent method of warming it. Another method is to place it for a few minutes in water as hot as the hand can bear; then remove, dry with cloths, and wrap up for an hour or two in fresh cloths or a sheepskin to complete the drying process. In any case milk should be given freely and the lamb returned to the ewe and allowed to suck as quickly as possible. If it does not suck when held to the teat, an infant's nursing bottle and nipple may be used. A few teaspoonfuls each hour for a few hours will usually give strength to enable the lamb to nurse without assistance.

Disowned Lambs

Little trouble is experienced with disowned lambs if lambing pens are used. When a ewe refuses to own her lamb, it is sometimes sufficient to draw some of the milk and rub it upon her nose and also upon the rump of the lamb.

A heavy-milking ewe with only one lamb can sometimes be made to adopt an orphan or the twin lamb of a lighter milking ewe. To do this, saturate the lamb's skin with the liquid produced by the ewe during lambing. This will give it the odor of her own newborn lamb. If possible, place the lamb with the ewe before her own lamb is born. A dog tied in an adjacent pen will sometimes cause a ewe to take to the lamb more readily than she otherwise would.

When there is difficulty in getting a ewe to adopt another lamb after she has lost her own, the skin of the dead lamb may be fastened over the lamb to be adopted (fig. 3). The skin should be removed in 2 or 3 days, as there is usually no trouble after this time.

Orphan Lambs

If for any reason a lamb is permanently orphaned, it may be raised by bottle feeding, whole cows' milk or goats' milk being commonly used. Very young lambs should be fed milk from ewes which have also recently lambed, when it is possible to obtain it. Two or more feedings of colostrum (milk from a fresh ewe) are usually essential to insure proper growth and development of a young lamb. For the first 2 days lambs should be fed 1 ounce every 2 hours, after which they may be changed to cows' or goats' milk without difficulty. Milk should always be fed from sterilized bottles and at about body temperature, or 100° F. Care should be taken to feed frequently and in small quantities.

Best results are obtained by feeding every 4 hours for 2 or 3 weeks at a rate per feeding gradually increased from 2 to 6 ounces. At this age they should be nibbling some hay and grain (bran, rolled oats, or cracked corn), and the period between feedings can be gradually increased to 8 hours, while the amount fed should be increased to 1 pint.

Young-Lamb Troubles

Well-nourished lambs from well-fed ewes have few ailments, but some troublesome conditions are to be expected in any flock. The causes and remedies of the more common ones follow.

Constipation is indicated by straining and distress and may be remedied by a teaspoonful of castor oil. White scours can best be



FIGURE 3.—This orphan lamb is wearing the skin of a dead lamb so that the dead lamb's mother will allow it to nurse.

cured by giving one-fourth of an ounce of cooking soda, 1 ounce of sulfate of magnesia, and a pinch of ginger in a small quantity of flaxseed tea or gruel. This should be followed in about 4 hours with 2 ounces of linseed oil. Indigestion is shown by distress and frothing at the mouth. One to 2 tablespoons of castor oil, depending on the size of the lamb, will effect a cure in most cases.

Sore eyes are of rather common occurrence. The eyes appear covered with a milky scum, or, in bad cases, become an angry red. Tears are apt to flow profusely. An eye-wash of silver nitrate or 15-percent argyrol will clear them up in a few applications. Scabs around the lip should be rubbed off and a saturated solution of copper sulfate, diluted with an equal amount of water, applied to the sores.

Docking Lambs ⁴

Docking, or removing the tail, is best done at the age of 7 to 14 days. When correctly done it adds much to the appearance and cleanliness of the lambs and raises the selling price at the market. For this purpose knives, either sharp or dull, chisels, and patented docking irons and instruments have all been used. When a sharp-edged tool is used the pain is slight, but unless some care is taken the lambs may lose considerable blood. Docking irons which burn through the tail may be used, and thus reduce the loss of blood to a minimum, but if they are used too hot the wound will be slow in healing.

With any of these instruments the cut should be made about 1 inch

⁴ For details of this operation see Farmers' Bulletin 1134, Castrating and Docking Lambs.

from the body as measured on the underside of the tail. The lamb should be held with the rump resting upon the top of a panel or pen partition or upon a board if the hot irons are used. A docking stool made for this purpose is shown in Farmers' Bulletin No. 1134. When docking with the hot iron the operator should work with the right hand, holding the tail in his left and pushing it toward the body. This will leave the skin above the cut to close over the wound. Pine-tar may be applied if flies are bad.

The elastrator is an instrument that expands and releases a rubber band around the tail at the point at which it is to be severed. The flow of blood beyond the band is restricted and the tail drops off at that point. This process usually requires from 21 to 28 days.

Castration⁵

Ram lambs may well be castrated at the time they are docked. Both operations should be done early on a bright, cool morning. In castrating, the lamb is held in the same position as for docking. The hands and knife or shears should be disinfected. Unless both testicles can be felt, the operation should be delayed. The lower third of the scrotum should be cut off. The testicles may then be removed by pulling them straight out. When a large number of sheep are being castrated, the testicles are sometimes removed by pulling with the teeth,

as it is very difficult to grasp them with the fingers and it is necessary to do the work as quickly as possible.

The elastrator is also used for this operation. The band is expanded, slipped over the scrotum above the testicles and released. The testicles and lower scrotum will be severed at the point at which the band surrounds them. A special type of clamp or pincer is also used extensively for castration. This instrument, the broad jaws of which do not come entirely together, is closed across the scrotum above the testicles. It severs the cords but does not break the skin. All methods mentioned are effective and when properly followed should cause only temporary pain.

Treatment of Ewes After Lambing

The shepherd should watch the ewe's udder closely to see that it is in good condition, for good lambs cannot be raised from ewes not milking freely. Ewes that have lambed should be kept in lambing pens from 1 to 3 days and then turned in a pen by themselves where they can be given special feed and care. After lambing they should be fed lightly at first, being put on full feed about the third or fourth day. At this time it is economical to feed heavily enough to produce a large flow of milk for the lambs. Heavy-milking ewes can make good use of from 1 to 2 pounds of grain per day.

THE FLOCK IN SUMMER

Shearing

Sheep are generally sheared in late spring or early summer, after lambing. Shearing should be done on a warm day, so that the sheep will not become chilled. Formerly shearing was done mostly with hand shears, but in most flocks of large size, power shearing

machines are now used. For small flocks under 50 head, hand-power machines are the most economical. The machines are more rapid, smoother work is done, and they cause less injury to the ewes. They are easier to use than hand shears, and more wool is obtained.

Remove tags or dung locks from the fleece, and then roll it up not too tightly, skin side out, and tie it

⁵ See footnote 4, p. 11.

with paper twine. Wool buyers prefer this method of tying to the use of wool boxes.

If the lambing is late, ewes may be sheared before lambing, but great care must be used in handling them. It is better to do the shearing after lambing. In any case it should be done before hot weather.

Dipping⁶

Sheep are dipped to free them from ticks, lice, and other skin parasites. A convenient time for dipping is shortly after shearing in the spring. Less dip per animal is needed, and the weather is usually more favorable at this time than at any other season. Dipping should be done in the morning of a clear, quiet, warm day, so that the sheep will be dry by night and will not catch cold. Every member of the flock should be dipped, and it is well to spray the inside of the sheep barn. Use any standard dip solution and follow the manufacturer's directions. Some of the rotenone dips prepared from derris or cube powder, and the new chlorinated hydrocarbon dips such as DDT, BHC, lindane, etc., are effective in one dipping. Other dips, such as nicotine, require a second dipping to insure complete eradication. Do not dip for about 10 days after shearing to allow shear cuts to heal.

Culling the Ewe Flock

The best time to dispose of ewes that are not to be kept for another year's breeding is in the summer or early fall, soon after the lambs have been weaned or marketed. Ewes that are to raise the next crop of lambs can then be prepared for fall breeding. Those of the mutton breeds do not ordinarily breed well nor keep in good condition after 5 years of age. Their usefulness, however, depends more upon the

condition of their teeth than upon their actual age. Fine-wool ewes usually remain useful to a later age. Sell aged ewes before they become too run down to be of value to the butcher. Ewes that give the most milk and raise the best lambs are likely to be thin by late summer and should not be judged by their appearance.

Nonbreeding ewes, poor milkers, light shearers, and mothers of inferior lambs should be marked as their defects are discovered and disposed of at this time. (Fig. 4.)

Weaning Lambs

If lambs are sold at from 3 to 5 months of age, they may run with their dams until that time. Lambs to be kept for breeding purposes should be weaned at from 4 to 5 months of age and put on fresh pastures where there is least danger of stomach worms. When weaning is done at this time, ewes can be put in better condition for fall breeding. Ram lambs left in the flock worry the ewes and may get some of them in lamb. When lambs are to be kept, the best method of weaning is to leave them on the old pasture for 3 or 4 days and remove the ewes to a scanty pasture to check their milk flow. As soon as the lambs cease fretting for their dams they may be moved to fresh pastures where the ewes have not been. Ewes with large udders should be partially milked once every 3 days until they go dry.

Summer Pastures

The breeding flock in summer needs little except good pasture, shade, salt, and plenty of fresh water. Bluegrass, although one of the most popular pastures, is likely to be too dry in late summer and too unbalanced in food nutrients for ideal feed. It is at its best in the spring and fall; it should be supplemented with forage crops in the summer. Alfalfa is sometimes pastured in the summer, but is used

⁶ For further particulars see Farmers' Bulletin 2057, *The Sheep Tick and Its Eradication*.

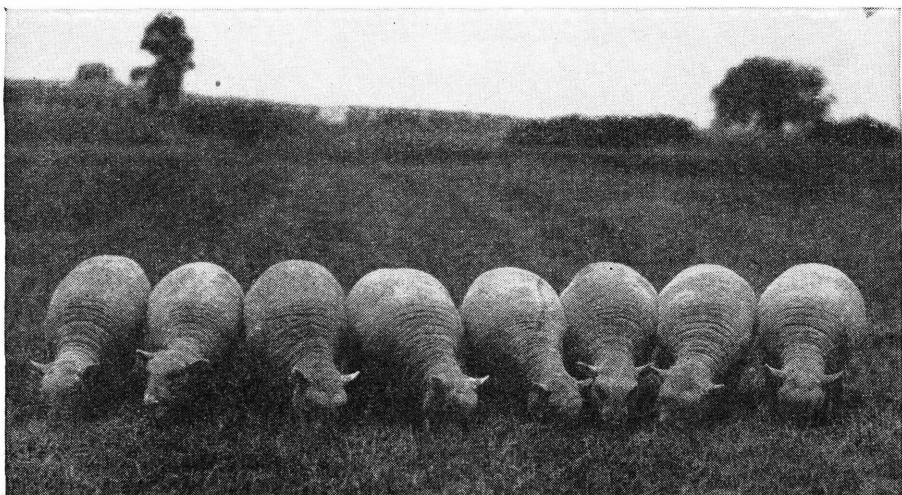


FIGURE 4.—A group of yearling ewes to replace the older ones culled out in the fall. These ewes have been cared for to produce good fleece and full development for use as breeders.

to better advantage when fed as hay in the winter. There is some danger of loss from bloat^{ing} when sheep are grazed on alfalfa or clover. Sweetclover is worse than the red and alsike in this regard. Sheep should be given a good feed before being turned on such pasture, and the alfalfa and clover should be dry. If these precautions are taken, little difficulty should be experienced from bloat^{ing}. Rape makes an excellent supplement for bluegrass, but is a forage crop rather than a summer pasture, though it may well supplement bluegrass. Soybeans are also good forage, and if the flock is changed to another part of the field when most of the leaves have been eaten off, the plants will make further growth for later use. Cowpeas are a good feed for older sheep, although unpalatable to lambs. Bermuda grass, when kept short, is especially good when reinforced by lespedeza and bur clover, which grow at different seasons from the Bermuda grass and are best used as a sheep pasture in this way. The aftermath of grain and timothy fields furnishes feed for many flocks

and helps greatly to reduce the cost of carrying the flock through the summer.

Avoiding Stomach Worms

In many farming sections the flockmaster's most serious troubles are likely to be caused by internal parasites, the effects of which are particularly evident during the latter part of the pasture season. Of these parasites the stomach worm is the most common and troublesome. It occurs on most farms and probably all. No practicable means of entirely avoiding infection with this parasite has been discovered, but in the Corn Belt and in the South by proper arrangement of the summer pasturage and some medicinal treatment it has been possible to keep the number of worms below the danger point. A knowledge of the development of this parasite affords a basis for the system of changing pastures and medicinal treatment that insure a healthy condition of the flock.

Stomach worms live in the fourth stomach.⁷ They are from one-half

⁷ Farmers' Bulletin 1330, Parasites and Parasitic Diseases of Sheep.

to 1¼ inches long and have a fine red stripe running in spirals from end to end of the body. Their eggs pass out in the droppings of the sheep and hatch in a few hours, days, or weeks, depending on the temperature. At temperatures lower than about 40° F. development is arrested. The larva which hatches from the egg molts twice and then crawls up a moist blade of grass. As it remains coiled on the blade, it may be swallowed by some animal. Eggs or young, uninfected larvae may be killed by freezing or drying, but the infective larvae on grass will sometimes live. After being taken into the body of a ruminant they develop into mature worms.

The injurious action of stomach worms has been attributed to loss of blood, loss of nutritive materials, interference with digestion, and the destruction of red corpuscles by a poisonous substance secreted by the parasites which is absorbed into the blood. Affected lambs become anemic, thin, and weak and may either die or continue for a long time in poor condition and fail to grow as they should. Visible indications of anemia (thinning of the blood) caused by the parasites are a white, paperlike appearance of the skin and the mucous membranes of the mouth and eyes and watery swellings under the jaws. This condition is sometimes referred to as "bottle jaw" or "poverty jaw."

Treatment of infested lambs brings about recovery if given in time, although prevention is safer and cheaper. Young lambs are unlikely to become seriously infected by larvae developed from eggs

dropped by older sheep in barns or yards bare of grass. On noninfested pasture, larvae will not ordinarily develop in considerable numbers to the infective stage in less than 10 days or 2 weeks. If the flock is moved to fresh, noninfested ground by that time, the danger is avoided for a further period of the same length.

It is not known how long larvae of this parasite will continue to be dangerous. Since freezing commonly kills unhatched eggs, a pasture in cold climates that was not used in summer and fall until after frost will be practically safe for lambs for a limited time the following spring or summer, provided old sheep are removed from it before winter is over. The desirability of obtaining the maximum amount of grazing from small areas, thereby reducing the fencing needed, makes it advisable to adopt a plan of rotation of forage crops for summer use. Land on which fall wheat or rye has been sown is safe for spring use, and if plowed and sown to rape or other crops for later grazing, it will then also be free from serious stomach-worm infestation.

A mixture of phenothiazine and salt in the proportion of 1 to 9 by weight is the most generally recommended treatment for internal parasites of sheep. This mixture should be kept before the sheep at all times during the warm grazing season. It should be kept in covered boxes or in sheds, when possible, to avoid wastage from rain or moisture. On farms where sheep have not been kept previously, trouble from stomach worms is not likely to be serious until the second or third summer.

PREPARING LAMBS FOR MARKET

Early and Late Marketing

Under ordinary farm conditions in the latitude of the Corn Belt and in the South, lambs should be ready

for market at from 3 to 5 months of age. When young they gain faster and put on the same amount of flesh for less cost than when they are older. Then, too, they make only

small gains during the heat of summer, and at this time parasites are most troublesome. Risk of accident is always higher when lambs are held for a long time. More feed is saved for the breeding flock and less labor is needed if the lambs are sold early. Therefore, in these areas where the summers are too hot for late lambs, the lambing period should be early enough to have lambs ready for market by May or June, or at least not later than early July.

In New England and similar territory where grain and choice legume hay are expensive, but where summers are comparatively cool and good pastures are abundant, it is more profitable to have the lambs born in May or June. By this plan the pastures furnish all the feed that is required from the time the lambs are born until they go to market in early November just after the rush of western lambs. Flocks producing late lambs on good pasture require no grain throughout the year, whereas the ewes producing early lambs need grain from about 1 month before lambing until pasture is abundant, and the early lambs must have grain from the time they will eat it (at 1 or 2 weeks of age) until they go to market. In New England, late-lambing ewes require much less attention during the lambing season than the ewes that drop their lambs in February or March.

In New England, both early and late lambs require medicinal treatment for stomach-worm infestation.⁸ Frequent change of pasture aids in stomach-worm control and helps to keep the flock in thrifty condition.

Teaching Early Lambs To Eat

Every effort should be made to keep lambs growing from the start.

⁸ See Farmers' Bulletin 1330, Parasites and Parasitic Diseases of Sheep.

The first essential is to teach them to eat. Liberal feeding of grain to lambs dropped before pastures are ready is profitable ordinarily. This may best be done in small inclosures known as "creeps," to which the lambs have access at all times, but into which the ewes cannot come. The creep should contain a rack for hay and a trough for grain so arranged that the lambs cannot get their feet into them.

All feed, especially ground feed, should be clean, fresh and free from mold. The lambs will begin to nibble at feed when from 10 to 16 days of age. Pea-green alfalfa of the second or third cutting is one of the most relished feeds. Flaky, sweet wheat bran probably ranks next. For the first few days these are the ideal feeds. A little brown sugar on the bran at first will make it more palatable. Linseed meal is also good to mix with the bran. Until the lambs are 5 to 6 weeks old, all their feed should be coarsely ground or crushed. The Ohio Experiment Station has found that for young lambs to be marketed a grain ration of corn is of about the same value as one of 5 parts corn, 2 parts oats, 2 parts bran, and 1 part linseed meal. Linseed meal is especially relished by lambs and is valuable in promoting growth rather than fat.

Such feeds as middlings are too floury for substantial use. Rye is less palatable than oats or barley. The linseed meal may be replaced by soybeans if they cost less. Cleanliness is always an important factor in keeping lambs growing. Always feed in an empty trough, and if it becomes soiled, scrub it out with limewater.

Raising Lambs in Corn Belt and South on Pasture Alone

Raising lambs on pasture without other feed in the latitude of the Corn Belt or the South is practical only when pasture is abundant.

The main advantages of this plan lie in that little care is needed and the feed cost is lower. The cost, however, depends upon the quality of the pasture and the value of the land. Late lambs that have never had grain are particularly liable to be injured by stomach worms if pasture is short or heavily pastured with sheep. Lambs make smaller gains in hot weather, and there is the possibility of droughts drying up the pastures, with resulting decrease in the ewes' milk at the time of the lambs' greatest need. Feeding grain to lambs on pasture is only partially satisfactory and is particularly unlikely to be profitable if lambs have not learned to eat before going to pasture.

When grass pastures are to be used for a flock turned out when the lambs are 5 to 8 weeks old, it is desirable to have sufficient divisions to allow frequent changes without returning the lambs to any ground previously grazed in the same season.

The Dry-Lot Method

Some breeders of purebred sheep have practiced a dry-lot method of raising lambs, mainly to avoid stomach-worm troubles. Under this plan lambs do not leave the sheds or yards until they are weaned, at which time they are put on clean, fresh pastures. In the meantime they are fed hay and grain, and their dams are returned from the pastures two or three times each day to allow the lambs to nurse. Because they do not graze, the lambs have slight chance of becoming seriously infected with stomach worms.

Some raisers of market lambs follow the plan of keeping both ewes and lambs in dry lots. Where green feeds or soiling crops are grown near by and fed in the lot, the ewes produce milk well and the lambs grow at a profitable rate.

The main advantage of such a soiling system is that it insures freedom from injury by internal parasites. Less fencing is needed if the ewes can be grazed elsewhere after the lambs are sold. If this can not be done, as much fencing will be needed for the ewes in the fall as would have been required for the spring flock.

This plan is most likely to work well where alfalfa is the main soiling crop. Feeding in the yards prevents loss from bloat, and there is no need for plowing the land as would have to be done if it were grazed several times each season.

The Forage-Crop Method⁹

The practice of grazing the flock on forage crops until the lambs are sold can be recommended only where land is at a premium and where internal parasites cause trouble. Under this plan ewes and lambs are first grazed on fall-sown wheat or rye. The land is divided to avoid the necessity of keeping the flock longer than 10 to 14 days upon the same ground. By the time the second lot of this crop is grazed down, spring-sown peas and oats can be ready and the fall-wheat ground plowed and reseeded to another cereal or to rape or soybeans for later use. Such a plan requires much labor in preparing and seeding the land, but it produces the largest amount of feed per acre and reduces trouble from internal parasites. Since phenothiazine has been found so effective against internal parasites, temporary pastures are most useful for emergency feed or for lengthening the grazing period.

Experiments conducted at Purdue University Agricultural Experiment Station, Lafayette, Ind., in which comparable lambs were produced by 4 methods of feeding, over a period of 3 years, showed

⁹ Farmers' Bulletin 1181, Raising Sheep on Temporary Pastures.

that good, fresh pasture, when available, gave the greatest return over feed costs. When the pasture was only fair, however, some grain fed to the lambs in creeps was beneficial. This method produced the heaviest lambs, but they had less finish than those fed on alfalfa hay and grain.

Using harvested feeds exclusively for both ewes and lambs is

too expensive for producing lambs to be placed on the regular market at a time when they must compete with grass-fed lambs. If soiling crops could be used instead of hay under the dry-lot method, there would no doubt be some reduction in feed costs, but this method seems more adapted to the production of high-quality purebred lambs or lambs for a specialized market.

MOTION PICTURES AVAILABLE ON SHEEP RAISING

The United States Department of Agriculture has several motion pictures on various aspects of sheep raising discussed in this publication. These are listed below. For information on these motion pictures and how to obtain a print for showing, see your county agricultural agent or write to the Motion Picture Service, U. S. Department of Agriculture, Washington 25, D. C.

TAILOR-MADE SHEEP—1 reel, 16 mm., sound, black and white; released 1952. 10 minutes.

SAVE MORE LAMBS—1 reel, 16 mm., sound, black and white; released 1952. 7 minutes.

LIVESTOCK COOPERATIVES IN ACTION—2 reels, 16 mm., sound, color; released 1950. 15 minutes.

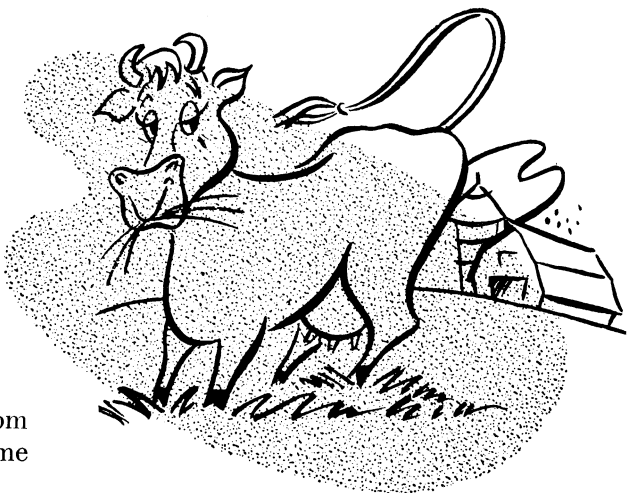
COOPERATIVE WOOL—FROM FLEECE TO FABRIC—3 reels, 16 mm. and 35 mm., sound, black and white; revised 1941. 30 minutes.

WOOL—MARKETING AND MANUFACTURE—3 reels, 16 mm. and 35 mm., silent, black and white; released 1932. 41 minutes.

U. S. GOVERNMENT PRINTING OFFICE: 1953

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 10 cents

Improve Your Grasslands and . . .



- Cut your feed costs.
- Get more income from your grass and legume acreage.
- Build up and conserve your soil.
- Save work and cut your labor bill.
- Get higher yields from other crops in your rotation.

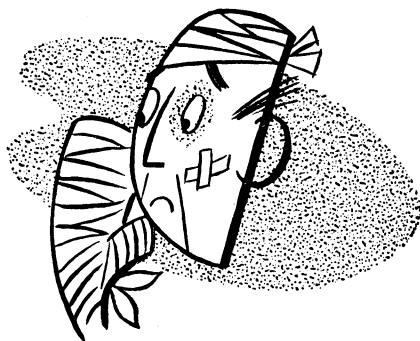
To Improve Your Grasslands . . .



- Seed varieties and strains that are adapted to your farm and to your feeding plans. Use high-quality seed. Buy certified seed if possible.
- Sow at the right time on a properly prepared seedbed.
- Fertilize and lime your soil.
- Control weeds, brush, and insect pests.
- Practice controlled and rotation grazing, where necessary.
- Plan pastures to provide good grazing as much of the year as possible.

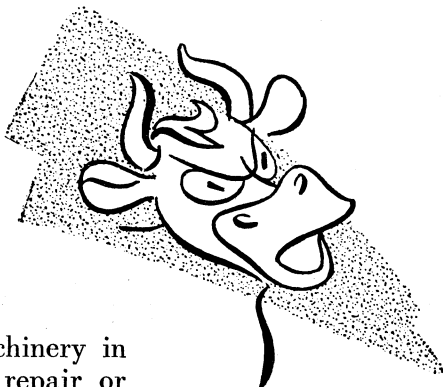
For Details . . . SEE YOUR COUNTY AGENT.

Farm Accidents Each Year . . .



- Kill about 15,000 people.
- Injure or cripple about 1 $\frac{1}{4}$ million more.
- Cause loss of 17 million man-days of farm labor, or the services of 46,000 men working every day for a year.

Help Prevent Most of These Accidents!



- Keep tractors and other farm machinery in good repair. Equipment in bad repair or carelessly handled ranks first in killing or injuring farm people.
- Handle bulls and other farm animals carefully. They rank second in causing farm accidents and deaths.
- Use sharp-edged tools with caution—sickles, saws, corn knives, chisels, screwdrivers, axes.
- Take proper care in using, handling, and storing insecticides and other poisonous chemicals.
- Install, use, and repair electrical appliances and equipment properly.

*You can lessen the seriousness of many accidents by immediate and proper care. Keep a first aid kit handy and know how to use it.
Call a doctor.*